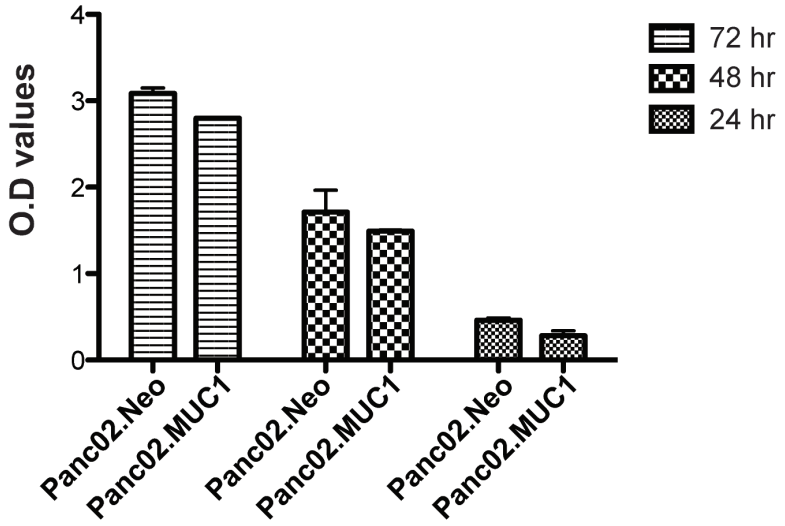
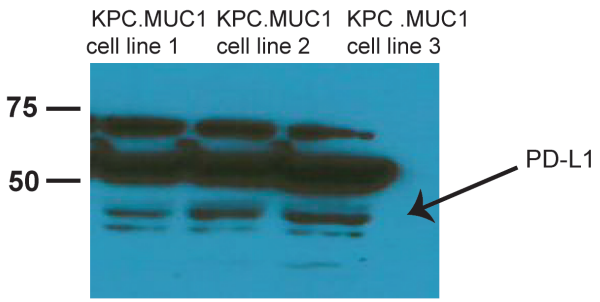


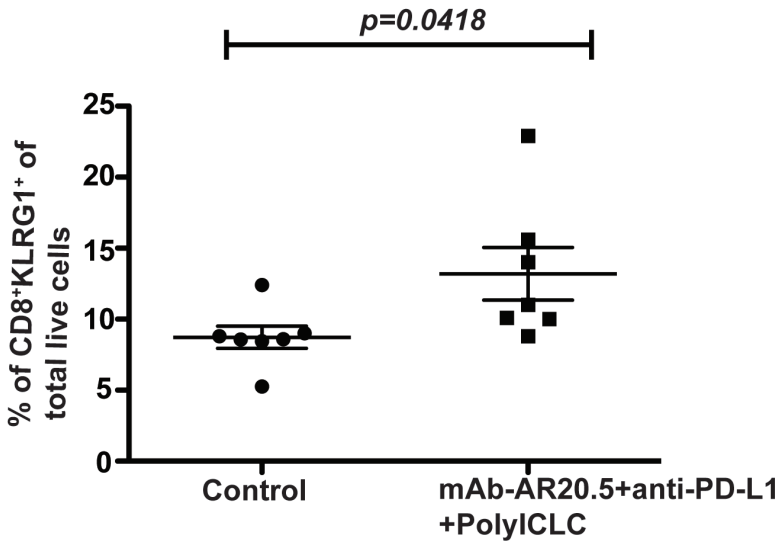
Supplementary Figure 1: MTT based proliferation assay for Panc02.Neo and Panc02.MUC1 cells at different time points. *p >0.05*, two-way ANOVA using the Bonferroni correction for multiple comparison.

Supplementary Figure.1



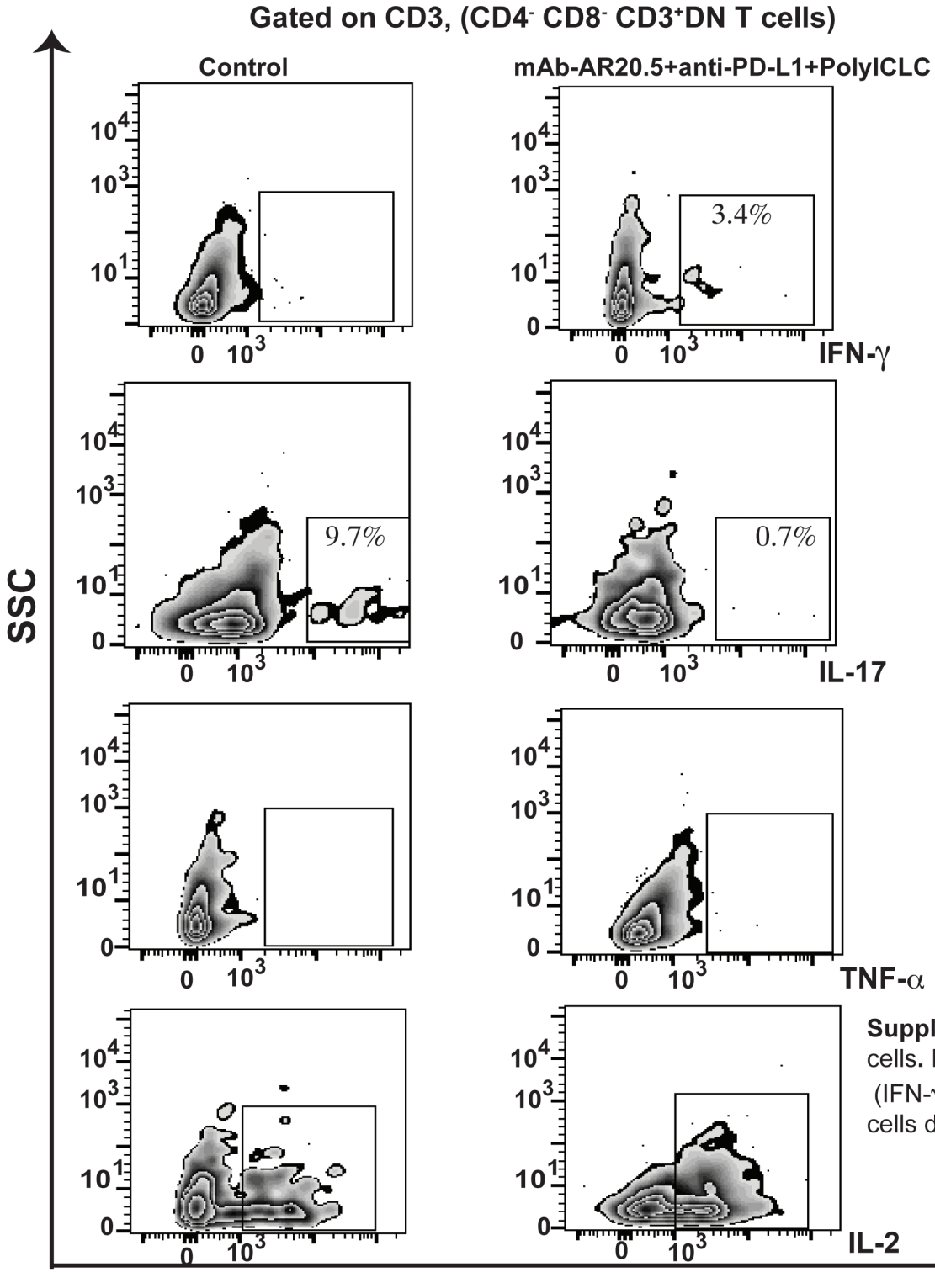
Supplementary Figure 2: Representative blot depicts PD-L1 (50 kDa) expression in different KPC mouse-derived pancreatic cancer cell lines used for mice studies.

Supplementary Figure 2.



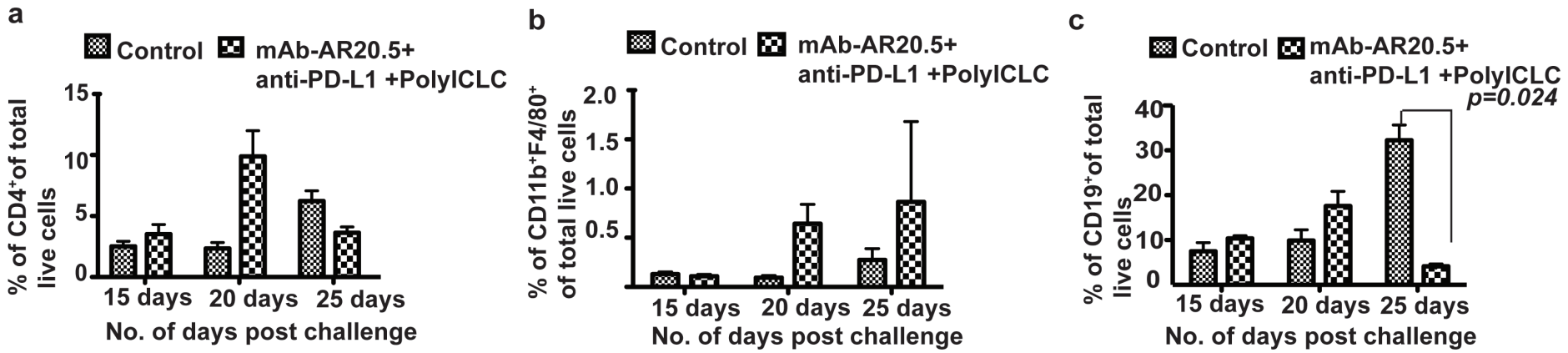
Supplementary Figure 3: Histogram plot demonstrates the frequency of activated CD8 T cells ($CD8^{+}KLRG1^{+}$ T cells) post 30 days of tumor cell challenge in different treatment groups. (n=7/group), unpaired t-test.

Supplementary Figure 3.



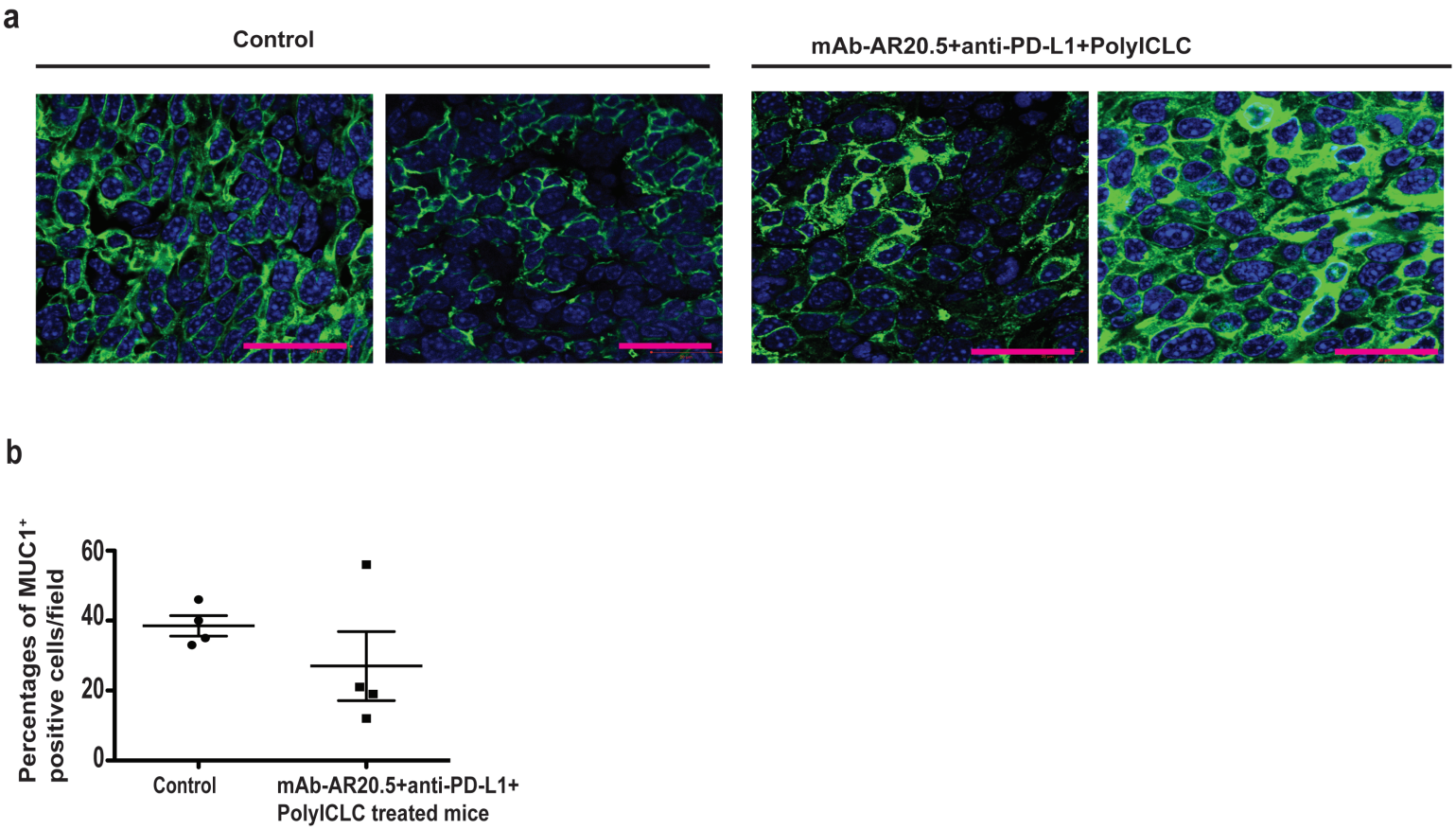
Supplementary Figure 4: Cytokine analysis of $CD3^+$ DN T cells. Representative FACS plot display cytokine (IFN-γ, IL-17, TNF-α, IL-2) production by circulating $CD3^+$ DN T cells derived from different treatment groups (n=4 mice/gp).

Supplementary Figure. 4



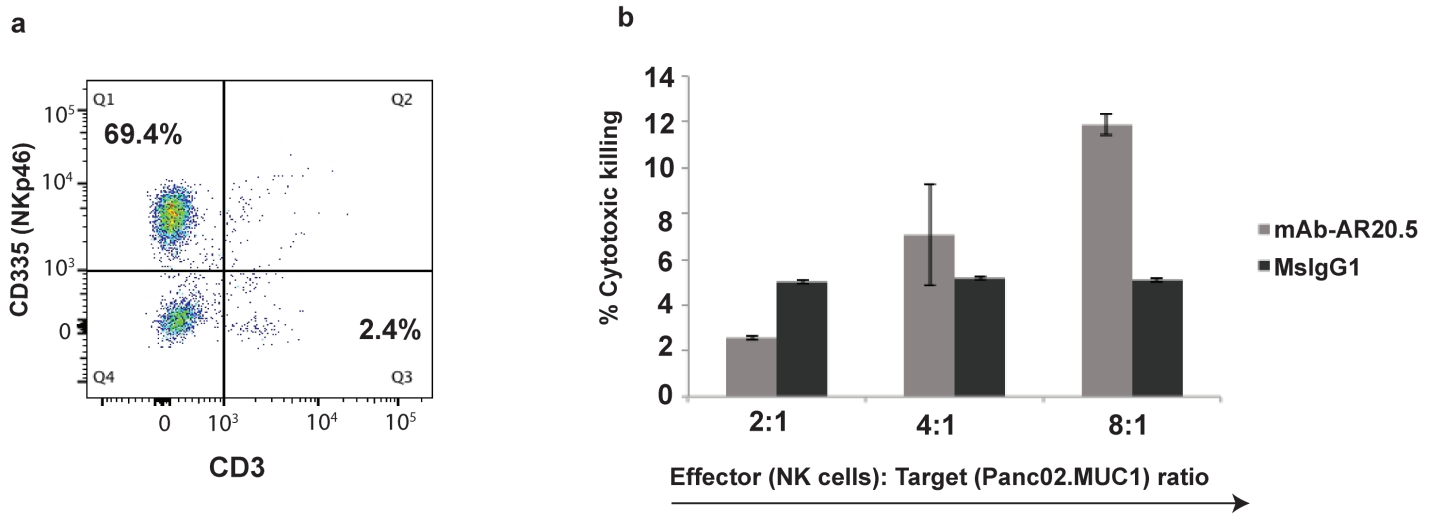
Supplementary Figure 5: Circulating levels of activated CD4, macrophage (F4/80), and CD19+ cells in different treatment groups. **a-c** Histogram plot demonstrates the frequency of $CD4^+$ T cells {*p>0.05*, two-way ANOVA}(**a**), macrophages ($CD11b^+F4/80$) {*p>0.05*, two-way ANOVA} (**b**) and CD19+ cells (**c**) at different days in saline control and mAb-AR20.5+anti-PD-L1+PolyICLC treated tumor-bearing mice. (n=5/group), two-way ANOVA using the Bonferroni correction for multiple comparison.

Supplementary Figure.5



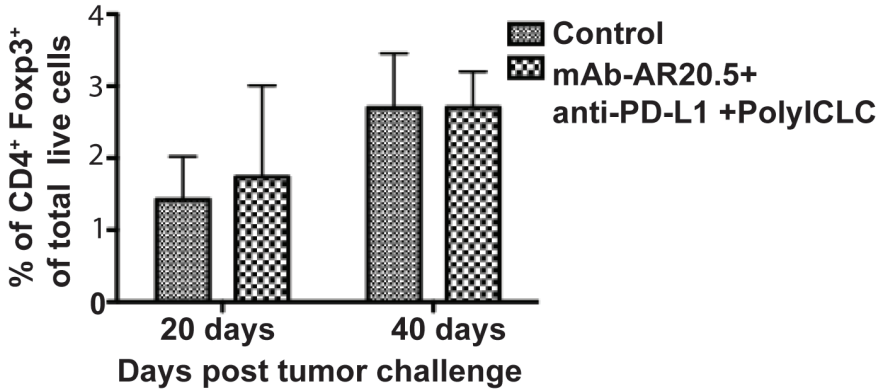
Supplementary Figure 6 : MUC1 expression in subcutaneous tumors remains unchanged post second tumor cell challenge in tumor-bearing MUC1.Tg mice. **a** Representative immunofluorescence images showing human MUC1 expression in tumor sections (4 mice/gp) derived from MUC1.Tg mice treated with saline or combination regimen (mAb-AR20.5+anti-PD-L1+PolyICLC) (scale bar 50μm). **b** Representative histogram depicts the percentages of MUC1 positive tumor cells per selected tumor field in diffrent treatment groups. MUC1 positive tumor cells were found statistical insignficant between the treated groups ($p > 0.05$, unpaired t-test). Images (60X) were quantified using image J software {n=4 (4 areas/tissue section)}.

Supplementary Figure. 6



Supplementary Figure 7 : mAb-AR20.5 shows mild cytotoxicity activity against Panc02.MUC1 cells**. a** Representative plot demonstrate NK cell-enriched population post magnetic sorting (magnetic kit from Milteny Biotech) of mouse splenocytes. **b** Representative histogram shows CFSE-based ADCC assay for mAb-AR20.5 (80µg) and MsIgG1 (80µg) by using splenic NK cells as effector and Panc02.MUC1 as target cells. Experiment was performed twice and results are expressed as Mean ±SEM. *p>0.05*, two-way ANOVA.

Supplementary Figure.7



Supplementary Figure 8 : Circulating levels of Foxp3^{+} CD4^{+} regulatory T cells between different treatment groups. Representative histrogram dipicts circulating Tregs popultion, which are indistinguishable between control (1st challenge) and mAb-AR20.5-based combination treated mice (2nd challenge) with Panc02.MUC1 tumor cells. *p>0.05*, unpaired t-test.

Supplementary Figure. 8